

Mitigation Plan

For

EXCel Mitigation Center's Deep Fork of the Canadian Mitigation Area

Located In

Lincoln County, Oklahoma

Created For:

**EXCel Mitigation Center
6655 South Lewis, Suite 300
Tulsa, Oklahoma 74136-1036**

Prepared By:

**Advanced Ecology, Inc.
2557 State Hwy. 7 E
Center, Texas 75935
936.598.9588**

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TABLE OF CONTENTS

<u>SECTION NO.</u> <u>NO.</u>	<u>PAGE</u>
I. INTRODUCTION	1
II. LEGAL AUTHORITY	4
III. SCOPE OF AGREEMENT	5
IV. PURPOSES AND GOAL OF THE MITIGATION AREA	6
V. LOCATION AND BASELINE CONDITIONS	6
VI. UTILIZATION AND DEVELOPMENT	9
VII. MITIGATION ACTIVITIES	9
VIII. ACTIVITY SPECIFICATIONS & GUIDELINES	23
IX. PROCEDURES FOR USING THE MITIGATION AREA	26
X. PERFORMANCE STANDARDS	28
XI. SERVICE AREA	29
XII. ACREAGE EVALUATION AND UTILIZATION PROCESS	30
XIII. ACCOUNTING PROCEDURES	31
XIV. LONG-TERM MANAGEMENT	32
XV. MONITORING, REPORTING AND REMEDIAL ACTIONS	35
XVI. FINANCIAL ASSURANCES	37
XVII. MITIGATION AREA OWNERSHIP/SPONSORSHIP	39
XVIII. VALIDITY AND TENURE OF THIS AGREEMENT	40
XIX. APPENDICES	41

LIST OF FIGURES

FIGURE 1 PROJECT VICINITY MAP

FIGURE 2 PROJECT LOCATION MAP

FIGURE 3 WATERS OF THE UNITED STATES MAP

FIGURE 4 STAND MAP

FIGURE 5 SITE DEVELOPMENT MAP

FIGURE 6 SOILS MAP

FIGURE 7 TOPOGRAPHIC MAP

FIGURE 8 SERVICE AREA MAP

FIGURE 9 LEVEE AND SPILLWAY DESIGN DRAWING

I. INTRODUCTION

Section 404 of the Clean Water Act (CWA) (33 USC 1344 et seq.) and Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) authorize the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands, and for activities in, or affecting, navigable waters of the United States. The Department of the Army (DA), through the U. S. Army Corps of Engineers (USACE) Regulatory Program makes decisions to issue or deny permits based on a public interest review (33 CFR Parts 320-330) and, for activities subject to regulation under Section 404, on compliance with the U.S. Environmental Protection Agency (EPA) "Guidelines for the Specification of Disposal Sites for Dredged and Fill Material" (40 CFR Part 230), known as the section 404(b)(1) guidelines.

The USACE requires mitigation for adverse impacts to waters of the United States, including wetlands, associated with activities regulated under Sections 404 and 10 that are likely to occur and that would be of importance to the human or aquatic environment. The Council on Environmental Quality has defined mitigation to include avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts. The 404(b)(1) guidelines provide tools to evaluate impacts to the aquatic ecosystem and measures that can be taken to minimize those impacts. For those impacts that remain after all appropriate steps to avoid and minimize adverse impacts have been taken, appropriate and practicable compensatory mitigation is required to offset those remaining unavoidable adverse impacts.

Compensatory mitigation includes restoring, enhancing, creating, and preserving the aquatic system functions that would be lost or impaired due to a USACE-authorized activity. Compensatory mitigation may be implemented to offset the adverse impacts of one or more USACE-authorized projects within a single consolidated mitigation project. Consolidated mitigation projects may result in greater overall environmental benefit than those achieved with numerous small, individual mitigation projects and are usually more cost-effective to implement.

The USACE mitigation policy relative to projects authorized under Section 404 of the Clean Water Act is explained in a Memorandum of Agreement between the EPA and the USACE, which was signed on February 6, 1990. The memorandum establishes that: "The USACE will strive to avoid adverse impacts and offset unavoidable adverse impacts to existing aquatic resources, and for wetlands, will strive to achieve a goal of no overall net loss of values and functions." Compensatory mitigation for wetland impacts may be accomplished in several ways. The most common forms of

mitigation are projects, which result in the restoration, enhancement or creation of wetlands. In exceptional circumstances, compensatory mitigation may also be accomplished through the preservation of unique and valuable wetlands, which are under demonstrable threat of destruction.

In general, the memorandum establishes a preference for onsite mitigation at or in the immediate vicinity of the wetland impact site and for in-kind replacement using wetlands which are similar to those which would be impacted. These preferences may be overridden, however, if onsite and in-kind mitigation is not available, not practicable or if another mitigation option is environmentally preferable. Compensatory mitigation for wetland impacts should, to the extent practicable, results in a minimum of one-to-one functional replacement, or one-to-one acreage replacement if adequate functional assessment techniques are not available.

Two general approaches may be used to restore, enhance or create wetlands for mitigation purposes.

A. Project-Specific Mitigation - Restoration, creation, enhancement and, in exceptional circumstances, preservation of wetlands undertaken by a permittee in order to compensate for wetland impacts resulting from his specific project. The permittee performs the mitigation after his permit is issued and is ultimately responsible for implementation and success of the mitigation.

B. Consolidated Mitigation - A single, typically large, mitigation project serving to compensate for impacts resulting from multiple projects. Consolidated mitigation includes:

- 1. Mitigation Bank** - Wetland restoration, creation, enhancement, and in exceptional circumstances, preservation undertaken expressly for the purpose of compensating for unavoidable wetland losses in advance of development actions. Mitigation banks are established through a formal agreement or "mitigation banking instrument" signed by the USACE, interested resource agencies and a sponsor. Once a mitigation bank is approved, the sponsor generally performs the wetland restoration, creation or enhancement activities and subsequently uses (in the case of single-entity mitigation areas) or sells (in the case of commercial mitigation banks) "credits" which are generated by these activities. When determined by the USACE to be appropriate, a permittee may, therefore, fulfill mitigation requirements specified in his permit by purchasing credits from an approved mitigation bank. The sponsor, rather than the permittee, is ultimately responsible for implementation, maintenance and success of the mitigation. Mitigation banks are

currently evaluated and approved in accordance with the Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, dated November 28, 1995.

- 2. Mitigation Area** - An arrangement in which a site and a specific wetland mitigation plan are approved through an "agreement" between the USACE, interested resource agencies and a sponsor. Wetland mitigation areas are similar, in most respects, to mitigation banks; however, wetland restoration, creation or enhancement is not necessarily performed in advance of the wetland impact. Instead, the sponsor generally performs it on an "as-needed" basis. Once a mitigation area is approved, the USACE may, in appropriate circumstances, allow permit recipients to fulfill their mitigation requirements by contracting with a sponsor who, in turn, performs the mitigation at his approved site on behalf of the permittees. The sponsor performs the mitigation using funds provided by the permittees. Mitigation areas are currently evaluated and approved in accordance with the Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, dated November 28, 1995. Both consolidated mitigation and project-specific mitigation may be accomplished on lands belonging to individuals other than the permit recipient. For project-specific mitigation proposals, the permittee is normally responsible for making the necessary arrangements with the landowner on whose property the mitigation will be performed. Both the landowner and the permittee must agree to the mitigation provisions specified in the permit; however, the permittee retains accountability for the implementation and success of the mitigation under the terms of his permit. For mitigation banks and areas, the sponsor, agrees in advance to perform the mitigation in a specified manner and to accept the responsibility for the implementation, management, maintenance, protection and monitoring of the mitigation on behalf of all permittees who elect to use the sponsor's site. In addition, for those mitigation banks and areas that require a Department of the Army Permit, the permit conditions will establish this accountability.

EXCel Mitigation Center (Sponsor) proposes to develop a mitigation area that will enhance and protect approximately 206 acres of Deep Fork floodplain habitat in Lincoln County, Oklahoma while providing a source for off-site compensatory mitigation of unavoidable adverse impacts to wetlands and other waters of the United States in the mitigation area's service area resulting from USACE-authorized activities under Section 404 or Section 10. Refer to Figures 1 and 2 in the appendices for the project location.

In order to accomplish this, the Sponsor has acquired to right to develop and implement appropriate deed restrictions on all applicable acreage with the mitigation area. A copy of the agreement

between Sponsor and the landowner has been included within the appendices of this document.

II. LEGAL AUTHORITY

Advanced Ecology, Inc. (AEI) has created this mitigation plan (MP), on behalf of the Sponsor for use in establishing a mitigation area. The MP is based in part on AEI's professional knowledge and experience in dealing with wetland delineation, permitting, wetland restoration, and natural resource management. Much of the framework and language have been derived from similar projects, guidance and correspondence with other state and federal agencies including the Fort Worth, New Orleans, Galveston, Mobile, and Vicksburg USACE districts, as well as the EPA, United States Fish & Wildlife Service and various state wildlife conservation offices.

Other important documents or guidance, upon which this MP was based, include *Mitigation Banks and Mitigation Areas*, New Orleans District USACE, *Compensatory Mitigation*, New Orleans District USACE, *Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks*, USACE, and the *Mitigation Banking Instrument, Big Woods on the Trinity Mitigation Bank*, Anderson County, Texas (AEI & MBRT-Fort Worth District).

This MP was also developed with the intent to fall within accordance with the following federal and state statutes, regulations, guidelines, and policies:

- Clean Water Act (33 USC 1251 et seq.)
- Rivers and Harbors Act of 1899 (33 USC 401, et seq.)
- Regulatory Programs of the US Army Corps of Engineers (33 CFR Parts 320-331)
- Guidelines for the Specification of Disposal Sites for Dredged and Fill Material (404(b)(1) Guidelines, 40 CFR Part 230
- Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines (February 6, 1990)
- Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks (November 28, 1995)
- National Environmental Policy Act (42 USC 4321 et seq.)
- Council on Environmental Quality Procedures for Implementing the National Environmental Policy Act (40 CFR Part 1500-1508)
- Executive Order 11990 (Protection of Wetlands)
- Fish and Wildlife Service Mitigation Policy (46 FR 7644-7663, 1981)

- Endangered Species Act (16 USC 1531 et seq.)

III. SCOPE OF AGREEMENT

This MP shall serve as the agreement authorizing the Sponsor to establish and operate the *Excel Mitigation Center Deep Fork of the Canadian Project* in Lincoln County, Oklahoma (Figure 1). For purposes of this agreement, “Sponsor” shall mean the current Sponsor or any successor Sponsors of the mitigation area.

Under this agreement, for stands/areas developed under a compensatory mitigation plan, the Sponsor shall:

- Implement and maintain the mitigation area as specified in the MP,
- Establish a perpetual deed restriction on areas developed as compensatory mitigation,
- Maintain current accounting records on the mitigation area, and
- Monitor the mitigation area property for ecological sustainability and conduct required remedial activities.

The following agencies were contacted in the development of this MP as members of the Mitigation Bank Review Team (MBRT):

- U.S. Army Corps of Engineers, Tulsa District
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service, Oklahoma City
- Oklahoma Department of Game & Fish
- Oklahoma Department of Environmental Quality

The USACE shall serve as chair of the MBRT and be responsible for making final decisions regarding the terms and conditions of the MP where consensus among the MBRT members cannot otherwise be reached within a reasonable time. Notwithstanding any provision of this agreement to the contrary, the State of Oklahoma retains the authority to require whatever conditions are necessary to satisfy state law regarding Section 401 water quality certifications of USACE permits.

IV. PURPOSES AND GOAL OF THE MITIGATION AREA

Establishment of the mitigation area is proposed to provide a source for off-site compensatory mitigation of unavoidable adverse impacts to wetlands and open water habitat within the mitigation area's service area resulting from USACE-authorized activities under Section 404 or Section 10. Off-site mitigation credit for in-stream river or stream impacts shall generally not be eligible for this proposed mitigation area. The purposes of the mitigation area are to:

Purpose 1. Provide for the replacement of the chemical, physical and biological functions of wetlands and other aquatic resources that are lost or degraded as a result of USACE-authorized impacts,

Purpose 2. Provide USACE permit applicants greater flexibility in compensating for unavoidable adverse impacts to the aquatic ecosystem after appropriate and practicable measures have been taken to avoid and minimize project-related impacts on site and after practicable compensation has been conducted or shown not to be in the best interest of the environment, especially when those impacts would be relatively minor,

Purpose 3. Provide more extensive, higher quality, and more cost-effective enhancement and protection of wetlands and other aquatic resources over that typically achieved by other forms of compensatory mitigation for activities that have minor adverse impacts on the aquatic ecosystem, and

The goal of the mitigation area is to develop native, self-sustaining habitat types historically characteristic of the area that best represent the potential natural vegetation expected for the respective range and woodland/forest site conditions (i.e., soils, climate, hydrology, fire, etc.) for the area. The predominant habitat type would be a closed-to-partly-open canopy layer dominated by oaks with significant components of other bottomland hardwood tree species and shallowly flooded herbaceous wetlands.

V. LOCATION AND BASELINE CONDITIONS

A. GENERAL

The *Excel Mitigation Center* landbase spans approximately 206 acres of a 441 acre tract of land along the Deep Fork of the Canadian River, in Lincoln County, Oklahoma (Figure 2). The landbase presents a mosaic of habitat types including bottomland forests interspersed with wetlands (oxbows, creeks and ponds), upland and bottomland pastureland, and miscellaneous features such as roads, an abandoned railroad embankment, and fences. The topography of the land is quite diverse, having been formed from the action of the Deep Fork River (Figure 7). Previous dredging activities have significantly altered and channeled the historic route of the river.

The soils, vegetation, and hydrology of the area have been described in “*Habitat Assessment Including Wetland Delineation & Vegetation Evaluation for the Milham Property, Chandler Oklahoma*”, dated 11 November 2001. Additional information can be found in Figure 6, located within the appendices.

The size and location of the landbase contribute to its value as a mitigation site and restoration area. The location and size are significant for a number of reasons.

1. The property encompasses an entire segment of the Deep Fork River Drainage extending across the ecological gradient of the floodplain. This results in an increased overall diversity, as various portions of the property have characteristics of upland, mesic, bottomland, and riverine habitat.
2. The property lies within the Deep Fork Geographic Priority Area. This property is typical of those described in the *FY1997 EQUIP Proposal*. The following information is an excerpt from that report.

“The resource concerns are excess water erosion, excess sedimentation/deposition, animal waste disposal, flooding, loss of plant diversity, loss of wetlands and stream mitigation area erosion and degradation. Several factors have caused the degradation of the natural resources. Erosion and sedimentation are excessive in much of the range and pastureland. Past farming practices have led to the degradation of the land. Natural fertility was not maintained and, in combination with inadequate structural practices, has led to numerous critical erosion areas. Poor grazing practices on rangeland has also led to a substantial amount of range in poor condition causing soil erosion and loss of plant diversity. As much as 20% of the grazing land, or 238,187 acres, needs treatment. Flooding has caused massive logjams that threaten state and

county highway bridges and are recurring problems. Agricultural land conversions along streams and tributaries have led to the loss of wetlands, degradation of streambanks, and loss of wildlife habitat. The conversion back to wildlife habitat is gaining popularity with the renewed awareness of its value. It is estimated that as much as 60,000 acres would be converted or maintained as wildlife habitat on the Deep Fork.

Flooding is a continuing problem. Efforts continue on the tributaries to build small flood control structures to prevent flooding. Due to the size of the watershed, it is apparent that flooding will continue on the Deep Fork. As much as 60,000 acres of land could be converted to wildlife and wetland areas. This type of flood plain management should be promoted to limit farmer losses associated with farming. There are also opportunities to partner with landowners to remove log jams responsible for flooding and scour erosion on the river. Limited financial and educational resources is a major cause for the continued resource degradation of all priority resource concerns.”

B. SITE SPECIFIC

Only portions of the 441-acre tract are addressed for utilization as a mitigation area. The Sponsor determined that 158.1 acres (not including the 6.5 acres of the Deep Fork River) within this area is likely to meet or exceed minimum requirements as waters of the United States including wetlands or other special aquatic sites, using the USACE 1987 Manual, and waters of the United States under 33CFR Part 328, without modification or enhancement (Figure 3). This information was submitted to the USACE for review and concurrence. The Sponsor also found another 48 acres of the 441-acre tract to be suitable for utilization as a mitigation area with modification and/or enhancement. Therefore, a total of 206 acres of the tract are applicable for the proposed activities.

The 206 acres were subdivided into seven (7) fairly distinct areas or stands based on the existing vegetative conditions, area topography, soil and hydrologic conditions, proposed management objectives, and administrative management considerations (Figure 4). Dividing the mitigation area into stands would facilitate the prescription and implementation of appropriate schedules of management activities to achieve overall project goals. Refer to Figure 4 for the configuration of the seven stands within the mitigation area.

VI. UTILIZATION AND DEVELOPMENT

Upon approval, the USACE may, in appropriate circumstances, allow permit recipients to fulfill their mitigation requirements by contracting with the Sponsor whom, in turn, performs the mitigation activities on the approved acreage on behalf of the permittees. The Sponsor performs the mitigation using funds provided by the permittees.

Development of stands/areas is proposed to occur in increments. The rate of development will be based on the demand for mitigation opportunities within the project service area. Upon the approval and development of stands/areas, the Sponsor will cease all land uses that are not consistent with this MP, including livestock grazing and other agricultural practices, on the applicable acreage and enter an appropriate perpetual deed restriction with the county clerk. As each project is sold and the acreage developed, a “site-specific” development plan and engineered drawings will be submitted to the USACE for approval prior to any activities being conducted.

Sponsor realizes that the USACE and other MBRT member agencies may regard some enhancement or creation efforts as have a higher ecological significance than others. Efforts will be made to conduct mitigation activities with the following level of order:

- Bottomland Pasture Hardwood Establishment
- Emergent Wetland Creation and Enhancement
- Beaver Ponds and On-Channel Pond Enhancement
- Mesic Pasture Hardwood Establishment
- Bottomland Hardwood Interplanting and Enhancement

However, development of the first or any subsequent stands/areas of the mitigation area shall not obligate Sponsors to commence the construction of the remaining stands/areas. Sponsor may elect to cease development of any stands/areas for which mitigation activities have not previously been contracted, subject to the continuing obligation of the Sponsor to maintain and monitor all completed stands/areas in accordance with this MP.

VII. MITIGATION ACTIVITIES

A. Management Strategy

The basic natural resource management approach is to recreate vegetative communities that closely approximates natural, native, self-sustaining, pre-settlement plant communities, associated with this section of the Deep Fork floodplain. The targeted plant communities will be those that best represent the potential natural vegetation expected for the respective range and woodland/forest site conditions (i.e. soils, climate, hydrology, fire, etc.) for the area (Figure 5).

Management planning emphasizes efforts to determine the appropriate nature of the potential natural vegetation for the area. Concurrently, management planning also considers the potentially destabilizing impacts of changes in soils, hydrology, fire, and non-native plant invasions on the restoration and long-term maintenance of the targeted native plant community. Also, management begins with current conditions and works gradually to achieve sustainable, low maintenance, plant community objectives.

The project site has a diverse mixture of habitats and unique man-made and natural features. However, the approach taken here is one of not only of enhancing or creating certain features, but one of restoring what once existed on the site. In order to achieve this objective, there are a number of goals that need to be accomplished. The first goal is to restore some of the pastureland to diverse, mast-producing hardwood forests and riparian zones. A second goal is to take existing stands of black willow or stands in which the majority of the “high quality” or mast-producing species have been removed and restore them to their original state by introducing and promoting desirable “quality hardwoods” regeneration. A third goal is to enhance marginal emergent wetlands and convert areas of non-jurisdictional pastureland to emergent wetlands.

B. Stand Descriptions & Goals

Stands 1 & 2 – Bottomland Pasture – 57.1 Acres

Location & History.

Stand 1 consists of three distinctly different areas of bottomland pasture that total 46.3 acres. Stand 1A is located on the north side of the Deep Fork (see Stand Map) and can best be described as the upper reaches of a creek that has “seep like” characteristics. The drainage carries considerable waterflow during rainfall events and remains saturated due to these seeps or springs. Stand 1B is located on the south side of the river adjacent to the county road. The county road, abandoned railroad embankment, and Kickapoo Creek levee have influenced the hydrology in this area, increasing periods of saturation and inundation. Stand 1C consists of two blocks located south of the river. One block is north of the abandoned railroad

embankment and west of Kickapoo creek and the other is in the southeast corner of the property, east of Kickapoo creek.

Stand 2 consists of 10.8 acres located north of the river in the northeastern section of the mitigation area. The creek that serves as the northern boundary of this stand was once the main channel of the Deep Fork. It became a secondary channel in the 1920's when a channelization project occurred. In the mid 1950's the acreage of Stand 2 was converted from native woodlands to farmland. Land clearing practices during that period would have been aimed at removing all existing vegetation by mechanical means and leveling the site as much as possible to increase drainage. Since that time the area has been periodically disked and leveled as part of the farming and/or maintenance process.

Our research indicates that stand characteristics have been significantly influenced by a number of sources in recent history. Grazing by cattle and other livestock have provided a continual impact. NRCS records document farming practices on the site in the 1950's. Historic evidence indicate that impacts from livestock likely began as early as the mid 1800's. This site would have been a particularly desirable site due to the proximity of high ground during flood conditions. While no records on the occurrence of timber harvesting have been documented for this specific site, it is likely that the first hi-grading also began during this period.

Vegetation.

All three areas of Stand 1 contain bottomland pasture communities consisting of no overstory or midstory and a groundcover layer which for the most part is a mixture of bermuda *Cynodon dactylon* and bahia *Paspalum notatum* grasses. Other species which have invaded these areas that are not maintained, consist of sumpweed *Iva annua*, mist flower *Eupatorium coelestinum*, balloon-vine *Cardiospermum halicacabum*, smartweed *Polygonum* sp., various sedges *Carex* sp., rough cocklebur *Xanthium strumarium*, field paspalum *Paspalum laeve*, fall panicum *Panicum dichotyflora*, aster bush *Aster dumosus*, snow-on-the-prairie *Euphorbia bicolor*, knotroot foxtail *Setaria geniculata* and other forbs.

Stand 2 is a bottomland pasture that has periodically been grazed and planted in cover crops. In recent years, the area has been left fallow due to the inability to grow commercial crops because of the wet nature of the site. Some areas within this stand are lower/wetter than others, but for the most part the vegetation present consists of prostrate knotweed *Polygonum ariculare*, Virginia buttonweed *Dioda virginiana*, sprangletop *Leptochloa* sp., and rush *Juncus coriaceous*.

Soils.

There are three different soils found within Stand 1 (Figure 6). The soils found in Stand 1A and the western block of 1C is the Yahola (Yf) series. Stand 1B contains the Port loam (Po) series and Stand 1C contains the Pulaski wet (Pw) series. The *Soil Survey of Lincoln County* lists all three soils as being part of the Woodland Suitability Group 1 and provides the following information; *This group of soils has very good to excellent potential for growing trees. The original cover probably contained trees of good quality that were large enough to have commercial value.* The soils in Stand 2 are mapped as the Roebuck clay (Rx) series.

Hydrology.

These stands occur within the Deep Fork floodplain and are subject to occasional to frequent flooding of brief to long duration. Watermarks on trees in adjacent stands indicate past flood depths of approximately 3-5 feet above the soil surface. Flooding events occur in two forms, first and most frequently as backwater flooding but also in the form of headwater flooding when the Deep Fork floodwaters overtop the natural levees and sweep across the upper floodplain.

Objectives.

The long-term objective for Stands 1A & 1C are to develop forested communities dominated by desirable mast-producing oak species, with associated native tree, shrub and groundcover species typical of pre-settlement conditions along the mid Deep Fork Basin.

Restoring forested riparian habitat, particularly along small tributaries and drainages of the Deep Fork, results in multiple enhancements to ecological functions of the watershed. Enhancements to the riverine wetland functional processes include improved energy dissipation, short-term surface water storage, nutrient cycling, retention of particulates, and buildup of organic carbon. Improved biological functions include increases in diversity and a mosaic pattern or “patchwork” of the stand. More importantly, they result in rapid height growth and increased vertical structure. This is particularly valuable to wildlife species such as migratory songbirds and raptors.

The long-term objectives for Stands 1B and 2 are to develop complexes of emergent wetlands interspersed with pockets of forested wetlands.

As with the previously described communities, these enhancements should improve the riverine wetland functional processes by improving energy dissipation, short-term surface water storage,

nutrient cycling, and retention of particulates. These improvements should also significantly improve the buildup of organic carbon.

Problems.

Effective restoration and enhancement of these stands require the elimination of grazing livestock. A more difficult problem is the control of invasionary species that will out-compete desirable hardwood species. Without effective management, we anticipate difficulty with early successional woody species, which regenerate much more readily than nut bearing species.

Management Activities.

Stands 1A and 1C will be restored to forested habitat by establishing desirable hardwood seedlings. Specific guidelines are provided in Section C, subsection 1 *Artificial Regeneration Guidelines*.

While Stand 1B does experience extended periods of saturation, the topography does not allow for the retention or storage of surface water once flood levels subside. Installing spillways in the abandoned railroad embankment will allow for better retention of water levels. This system of water retention provides a number of both immediate and long-term benefits to the restoration process. 1) By maintaining water levels, we can create an environment which directly favors the regeneration of oak species as well as native sedges and grasses while minimizing noxious weeds and other undesirable species; 2) Retained soil moisture from winter and spring floods, along with the capture of incidental rainfall can significantly increase the survival of planted seedlings. Increased availability of moisture during the summer months will also improve growth rates and; 3) Such practices also provide an immediate enhancement to the value of the area for migrating and wintering waterfowl and wading birds.

The desirable water depth within Stand 1B will also be dependent upon final elevations of Section Road **E 0950**. Modifications to proposed activities would be completed as necessary to ensure the continuity and safety of the roadbed. If upon further review, activities associated with raising the water depth would jeopardize the integrity of the section road, then reforestation would be conducted instead of raising the water level. Additional information is provided in Section C, subsection 3 *Water Regime Management Guidelines*. Engineered drawings, spillways, and additional design features will be provided in final site plans prepared as part of a permit application process.

A majority of Stand 2 will also be restored to forested floodplain by establishing desirable hardwood seedlings. Specific guidelines and planting rates are provided in Section C, subsection 1 *Artificial Regeneration Guidelines*. Approximately 2 acres of Stand 2 still contain seasonal depressions. Water depths of these wetlands range from 3 to 6 inches. Goals are to enhance and expand these emergent wetland habitats. Depths of existing depressions will be increased approximately 6" to 12" in depth and enlarged in size. It is anticipated that enlargement of these areas will create an additional 2 acres of depressional wetlands. Soil to be removed as a part of these activities will be placed on upland non-jurisdictional habitat. During these excavation activities existing plant material and organic matter will be sidecast for redistribution across the site. This material will be spread to a depth of one to two inches across the depressions to encourage and accelerate development of native vegetation. It is expected that additional seed sources will be deposited in the depressions during the first outbanking event of the Deep Fork. As planted hardwoods mature, it may be desirable to allow natural succession to increase the number of forested acres and fragment open areas.

Stands 3 & 5B – Willow Flats- 41.3 Acres

Location & History.

Stands of black willow *Salix nigra* account for approximately 41 acres of habitat within the mitigation area. These areas are described as Stands 3 and 5B (Figure 4). Research indicates that these stands are a result of failed conversion attempts at creating additional pastureland. These areas are located in riparian habitat of the Deep Fork that was converted to pasture in the 1950's for livestock production. The destruction of such habitat along the Deep Fork is well documented. The Soil Survey of Lincoln County, Oklahoma states:

"The native woodlands have deteriorated in the county because of cutting of all merchantable trees, annual or periodic burning, damaging grazing, and general neglect". Many of the cleared areas were subsequently found to be unsuitable for grazing or farming and abandoned".

Vegetation.

Vegetation control on these areas was halted in the 1970's, after which the habitat converted to monoculture stands of black willow. The overstory and midstory components are predominantly black willow with the occasional green ash *Fraxinus pennsylvanica* and common buttonbush *Cephalanthus occidentalis* in the midstory. Understory vegetation includes such herbaceous species as giant ragweed *Ambrosia trifida*, three-seed mercury *Acalypha ostryapholia*, and fall panicum.

Soils.

Soils on these areas are mapped as Yahola (Yf) and Port loam (Po) series. The Soil Survey of Lincoln County lists both these soils as being part of the Woodland Suitability Group 1.

Hydrology.

These stands occur within the Deep Fork floodplain and are subject to occasional to frequent flooding of brief to long duration. Watermarks on trees within the stands indicate past flood depths of approximately 2-5 feet above the soil surface. Flooding events occur in two forms, first and most frequently as backwater flooding but also in the form of headwater flooding when the Deep Fork River floodwaters overtop the natural river levee.

Objectives.

The long-term objective for Stand 3 and Stand 5B are to develop forested bottomland communities Dominated by desirable mast-producing oak species, with associated native tree, shrub and groundcover species typical of pre-settlement conditions along the upper to mid Deep Fork River basin of Oklahoma.

Near-term objectives include enhancing existing overstory conditions, establishing an oak seedling/sapling component for future stand regeneration, and managing selected canopy gap and sparse overstory areas to enhance the growth of native grasses and sedges.

Problems.

Effective restoration and enhancement of these stands requires the elimination of all grazing livestock. A more difficult problem is the control of black willow regeneration and other invasionary species that commonly out compete more desirable hardwood species.

Management Activities.

The first management objective of Stands 3 and 5B is to create an environment that will favor development of an overstory dominated by oak species along with an understory component that includes grasses, sedges, and desirable hardwood regeneration. This is proposed to be accomplished through a number of practices, some of which will result in immediate changes, some of which will result in gradual changes.

The current density and dominance of black willow does not present an environment favorable

for survival and growth of other hardwood species. Creating a favorable environment for seedling survival requires the creation of gaps and openings in the overstory canopy. Such openings can be created through the use of mechanized equipment or chemicals approved for forest use (i.e. injection or basal spray). Applications can be conducted in a checkerboard, linear, or random pattern creating a mosaic of habitat types. This will significantly improve the biological productivity of these communities.

Once a favorable environment has been created, canopy gaps and sparse overstory areas will be handplanted in desirable hardwood seedlings. Specific guidelines and planting rates are provided in Section C, subsection 2 *Stand Enhancement Guidelines*.

Stand 4 - Beaver Pond & Impoundments– 7.1 Acres

Location & History.

Stand 4 consists of a 4.9-acre beaver pond and 3 on-channel manmade ponds that total 2.2 acres (see Stand Map). All were created in bottomland pasture on habitat similar to that described in Stand 1. Runoff from the south during flooding events enters Stand 1 and drains into the beaver pond eventually exiting to Kickapoo Creek. The beaver pond also receives runoff from the western side of the property as well from a small intermittent creek. Historically this area was drained with a culvert located in the abandoned railroad embankment, during flooding events. Over the years beavers and deterioration have plugged the device, thus creating the beaver pond.

Vegetation.

All ponds have a fringe of forested habitat around the periphery of the ponds, consisting primarily of black willow. Dominant aquatic vegetation consists of alligator weed *Alternanthera philoxeroides*, smartweed, various rushes, and fall panicum.

Hydrology.

These features occur within the Deep Fork floodplain and are subjected to frequent flooding of brief to long duration. Water depths on all ponds are influenced by local runoff and outbanking events of the river. Water levels within the beaver pond during normal conditions are dependent on the abandoned railroad embankment. The embankment has significantly altered the

hydrology of significant portions of the bottomland pasture on the south half of the property. The resulting beaver activity has in effect converted the bottomland pasture to emergent and/or shallow water habitat.

Objectives.

Long-term objectives are to enhance and/or expand wetland habitat associated these water bodies. Adjacent habitat consists of bottomland pasture. Emergent wetlands can be enlarged and enhanced significantly around the beaver pond by modifying drainage outlets and installing a spillway in the abandoned railroad embankment. Characteristics of the on-channel impoundments can also be impacted by altering existing dam features.

Establishing a forested riparian zone around pond fringes and adding additional plantings of shrub species such as button bush to shallow water areas can be easily accomplished, resulting in multiple enhancements to ecological functions of the watershed. Enhancements to the

riverine wetland functional processes include improved energy dissipation, short-term surface water storage, nutrient cycling, filtration of particulates, and buildup of organic carbon. Improved biological functions include increases in diversity and a mosaic pattern or “patchwork” of otherwise open habitat. More importantly, they result in rapid height growth and increased vertical structure. This is particularly valuable to wildlife species such as migratory songbirds and raptors.

Problems.

Effective restoration and enhancement requires the elimination of all grazing livestock. Livestock significantly affect vegetation composition and water quality when watering and wading in shallow water areas.

Management Activities.

The first management activity for Stand 4 is to establish an effective spillway at the location of the deteriorated and plugged culvert. Installing a spillway in the abandoned railroad embankment will allow for more retention of water levels. This system of water retention provides a number of both immediate and long-term benefits to the restoration process. 1) By retaining water, we can create an environment which directly favors the regeneration of oak species as well as native sedges and grasses while eliminating noxious weeds and other undesirable species; 2) Retained soil moisture from winter and spring floods, along with the capture of incidental rainfall will significantly increase the growth of planted vegetation and; 3)

Water retention provides an immediate enhancement to the value of the area for migrating and wintering waterfowl and wading birds.

Following installation of the spillway, a shoreline zone of woody and shrub species will be installed around the beaver pond. A well-established zone of desirable vegetation will reduce sediment and loads resulting from runoff from adjacent upland habitat. Similar improvements will also be implemented around the stock ponds.

Planting guidelines for shrub species are provided in Section C, subsection 2 *Stand Enhancement Guidelines*. Additional information is provided in Section C, subsection 3 *Water Regime Management Guidelines*. Engineered drawings, exact elevations of spillways and other design features will be provided in final site plans prepared as part of a permit application process.

Stands 5A, 5C, 6A & 6B –Riparian and Forested Wetlands Habitat– 58.6 Acres

Location & History.

The remainder of the forested habitat within the project site consists of mixed hardwood communities occurring in the form of riparian habitat along the Deep Fork channel and associated smaller tributaries. While age, stocking levels, and species compositions vary, stand characteristics are similar in that desirable hardwood species constitute at least a partial component.

Stand 5A and 6A are located north of the river along the south boundary of an unnamed tributary and the north boundary of the Deep Fork (Figure 4). Stand 6B and 5C are located along the south boundary of the river. A high percentage of this habitat has been significantly impacted by silt deposition over the years, resulting in a much broader terrace in some areas. A majority of the mature timber has subsequently died, in some areas, as a result of this buildup.

Our research indicates that stand characteristics have been significantly influenced by a number of sources, including timber harvests, land clearing and grazing.

Vegetation.

The vegetation within Stand 5A includes green ash, sweet pecan *Carya illinoensis*, sugarberry *Celtis laevigata*, soapberry *Sapindus drummundii*, and red mulberry *Morus rubra*. This area has

a midstory/understory layer composed of green ash, deciduous holly *Ilex decidua*, soapberry, cedar elm, and sugarberry. Vegetation within 5C consists primarily of native pecan *Carya illinoensis*.

Dominant vegetation within Stands 6A and 6B consists of riparian habitat along the Deep Fork. The vegetation for the upper tier in each block is the same and consists of sweet pecan, deciduous holly, common and giant ragweed, Virginia creeper *Parthenocissus quinifolia*, green ash, Eastern cottonwood *Populus deltoides*, sugarberry, and poison ivy *Toxicodendron radicans*. The overstory species in the lower tier consists of all of the previously listed species with the addition of black willow, American elm, red mulberry, soapberry. Understory vegetation within the lower tier consists of mist flower, cocklebur, common pokeweed *Phytolacca americana*, slender copperleaf *Acalypha gracilen*, nodding wildrye, and goosefoot *Chenopodium sp.*

Soils.

The soil found in Stand 5A is the Roebuck clay (Rx). The Soil Survey of Lincoln County lists the Roebuck clay as being part of the Woodland Suitability Group 4. Stand 5C contains the Pulaski wet (Pw) series. There are three different soils types found within Stand 6. Stand 6A contains the Yahola (Yf) and Roebuck clay (Rx) series'. The soil that is found on the majority of the riparian habitat, both the upper and lower tiers, on the north end is the Yahola series. The Roebuck series is located at the northern end of Stand 6A, adjacent to Stand 5A. Stand 6B also contains two soil types, with the predominant soil being the Yahola series. The other soil type found in Stand 6B is the Pulaski (Pw) series and it is located on the eastern portion of the property adjacent to the Deep Fork River and Kickapoo Creek. The Soil Survey of Lincoln County lists the Yahola soil series as being in the Woodland Suitability Group 1, the Pulaski soil series as Group 2, and the Roebuck series as Group 4.

Hydrology.

These stands occur within the Deep Fork River floodplain and are subject to occasional to frequent flooding of brief to long duration from flooding events of the associated tributaries of the Deep Fork River. Watermarks on trees within the stand indicate past flood depths of ranging from several inches to 4 feet above the soil surface.

Objectives.

The long-term objective for these stands is to restore, enhance and protect mature, diversified

riparian habitat dominated by desirable mast-producing oak species, with associated native tree, shrub and groundcover species typical of pre-settlement conditions along the Deep Fork River basin.

Near-term objectives include maintaining and enhancing the existing desirable overstory components and establishing an desirable hardwood seedling/sapling component within selected canopy gap and sparse overstory areas.

Problems.

Effective restoration and enhancement of this stand requires the elimination of all grazing livestock. Another problem is the control of invasionary species that will out-compete more desirable hardwood species. We also anticipate difficulty with early successional woody species such as black willow, which regenerates more readily than nut bearing species.

Management Activities.

The primary goal is to maintain desirable stand components, particularly mature hardwoods within the overstory, while creating an environment favorable for development of desirable regeneration. Seedlings will be planted in existing canopy gaps and sparse areas as well as underplanted in select areas. The creation of additional gaps and openings will be required in some areas. Such openings can be created through the use of mechanized equipment or chemicals approved for forest use (i.e. injection or basal spray). Applications can be conducted in a checkerboard, linear, or random pattern creating a mosaic of habitat types. The creation of dead snags for cavity creation is a significant byproduct of herbicide applications. Conducted effectively, these activities can significantly improve biological productivity and diversity within these riparian communities. Specific guidelines and planting rates are provided in Section C, subsection 2 *Stand Enhancement Guidelines*.

Stand 7 – Mesic and Non-Jurisdictional Bottomland Habitat – 42 Acres

Location & History.

The mitigation area also includes approximately 42 acres of habitat that is not likely to be considered jurisdictional in its present form. This acreage was not included in the 164.1 (does not include 6.5 acres in Deep Fork River) jurisdictional acres that were previously described in the wetland delineated. This acreage was proposed to be included as part of the mitigation

area because it would both unify and compliment the different areas previously described. In addition, many of the proposed 42 acres would be affected through the enhancement of the adjacent areas.

This stand type is located in three distinct and different areas. Stand 7A is located in the northern half of the property and Stands 7B and 7C are located on the south half of the property. All these areas were historically cleared as part of an ongoing cattle or agriculture operation.

Applicable acreage within Stand 7A includes habitat best described as a narrow mesic buffer zone along the drainages. Applicable areas within Stand 7B consist of a small isolated hilltop entirely surrounded by bottomland pasture and emergent wetlands and an area located between the abandoned railroad embankment and the Deep Fork channel. Stand 7C consists of isolated segments of bottomland pasture that have slightly higher drainage capabilities as compared to adjacent areas.

Vegetation.

These stands contain a mixture of bermuda and bahia grasses with various herbaceous species like horse nettle *Solanum carolinense*, common ragweed, pepperweed *Lepidium virginicum*, and plantain *Plantago virginica*. The plant composition of these stands range from marginal wetland plant communities to upland communities.

Soils.

The majority of the soils found within these areas consist of the Darnell (DsE), Darnell-Stephenville Complex (DtE3) and Dougherty (DuD) series'. The Dougherty soil series is found on the north half of the property, in Stand 7A, and consists of deep, sandy soils that are well drained and moderately permeable, with slopes ranging from 3 to 8 percent. The remaining soils located in Stand 7A are Konawa (KoD3) and the Eufaula-Dougherty Complex (EdE). Stand 7B contains multiple soil types which consist of the Darnell (DsE), Renfrow (ReB and RfC2) series', as well as the Renfrow-Vernon (RvC3), Eufaula-Dougherty (EdE), Vernon-Lucien (VIE) and Chickasha-Bonham (CbC3) complexes. The majority of these soils are shallow loamy soils that are excessively drained and moderately permeable, with slopes ranging from 3 to 12 percent. Stand 7C is slightly higher in elevation than the surrounding areas. The soils found in the two areas of Stand 7C are Yahola (Yf) and Port loam (Po).

Hydrology.

These applicable segments of Stand 7 are located within the Deep Fork River floodplain. However, due to drainage conditions, and/or elevation they are subject to occasional flooding of brief to medium duration as compared to other segments of the mitigation area.

Objectives.

The long-term objective for Stand 7 is to enhance and protect acreage that is important or critical to the overall success of the project. Associated habitat within 7A includes valuable mesic riparian habitat that can provide significant filtration and buffering effects to adjacent streams. As described earlier, such riparian habitat results in multiple enhancements to ecological functions of the watershed. Enhancements to the riverine wetland functional processes include improved energy dissipation, short-term surface water storage, nutrient cycling, retention of particulates, and buildup of organic carbon. Improved biological functions include increases in diversity and a mosaic pattern or “patchwork” of the stand. More importantly, they result in rapid height growth and increased vertical structure. This is particularly valuable to wildlife species such as migratory songbirds and raptors.

Stand 7C and applicable portions of 7B consist of marginal (borderline) emergent wetlands. Slight manipulations or changes in vegetation and local hydrology will result in the creation of emergent or forested wetlands. This can easily be accomplished by establishing hardwood seedlings in some areas while modifying drainage in others.

It is anticipated that approximately 4-6 acres of mesic non jurisdictional habitat will be converted to jurisdictional habitat as a result of proposed enhancements.

Only 3.8 acres in 7B is clearly well drained habitat. As described earlier, this habitat consists of an isolated pocket of higher elevation surrounded by wetland habitats. Due to its location and relationship to the surrounding habitat, it would be harmful not to include it in the project. The most viable applications would be to restore it to native hardwoods.

Problems.

Effective restoration and enhancement of these stands require the elimination of all grazing livestock. A more difficult problem is the control of invasionary species that will “out compete” more desirable hardwood species. Without effective management techniques, we also anticipate difficulty with early successional woody species, which regenerate much more readily than nut bearing species.

Management Activities.

Applicable habitat within Stand 7 will be restored to hardwood. Specific guidelines and planting rates are provided in Section C, subsection 1 *Artificial Regeneration Guidelines*.

VIII. ACTIVITY SPECIFICATIONS & GUIDELINES

A. Artificial Regeneration

Tree planting on the EXCel Mitigation Center will occur in two forms. Bottomland pasture that currently consists of forage grasses and native herbaceous vegetation will be restored to forested habitat. In addition, supplementing native reproduction with additional hardwood seedlings will enhance existing stands of forested habitat. These areas consist of either monoculture stands of black willow or forested areas that exhibit large gaps in the existing canopy or forest stands with low species diversity.

To the extent possible, one to two year old seedlings having a minimum height of 18 inches and a root collar of three-eighths of an inch shall be used. A mixture of hard mast and soft mast producing (including light-seeded) species shall be planted. The percentages and composition of the overstory species to be planted will be determined prior to each planting. Goals are to utilize at least five tree and three shrub species from the following list with no individual species accounting for more than twenty-five (25) percent of the overall planting. It should be noted that soil type, ph, drainage and/or other site-specific factors might not always allow for three mast bearing species to be intermingled. Below is a list of tree and shrub species that are native to the Deep Fork River basin and planting composition will consist of some combination of the following:

<u>Common Name</u>	<u>Scientific Name</u>
Bitternut hickory	<i>Carya cordiformis</i>
Native pecan	<i>Carya illinoensis</i>
Black walnut	<i>Juglans nigra</i>
Eastern cottonwood	<i>Populus deltoides</i>
Black cherry	<i>Prunus serotina</i>
Green ash	<i>Fraxinus pennsylvanica</i>
American elm	<i>Ulmus americana</i>
Sycamore	<i>Platanus occidentalis</i>
American basswood	<i>Tilia americana</i>
Shumard oak	<i>Quercus shumardii</i>

Bur oak	<i>Quercus macrocarpa</i>
Pin oak	<i>Quercus palustris</i>
Water oak	<i>Quercus nigra</i>
Delta post oak	<i>Quercus similis</i>
Common buttonbush	<i>Cephalanthus occidentalis</i>
Roughleaf dogwood	<i>Cornus drummondii</i>
Chickasaw Plum	<i>Prunus angustifolia</i>
Possumhaw	<i>Ilex decidua</i>
Tree Sparkleberry	<i>Vaccinium arboreum</i>
Coralberry	<i>Symphocarpus orbiculatus</i>
American holly	<i>Ilex opaca</i>
Oklahoma blackberry	<i>Rubus oklahomus</i>
False indigo	<i>Amorpha fruticosa</i>
Green hawthorn	<i>Crataegus viridis</i>

Note: The species planted on-site will be dependent upon availability and the specific site requirements of individual species. No substitutions or additions will be made to this list without USACE approval.

1. Hardwood Establishment.

The following standards will generally apply to most bottomland hardwoods restoration projects involving a conversion from agricultural uses, but may be modified as necessary:

1. If necessary, wetland hydrology shall be restored by plugging or backfilling drainage ditches, removing or breaching levees, construction of retention dikes, cessation of pumping, etc.
2. Prior to planting, the site shall be prepared as needed to facilitate planting. To the maximum extent practicable, existing crop rows and furrows and ruts shall be removed in order to restore natural surface contours. Resultant ground elevations must be appropriate for the establishment and maintenance of wetland vegetation.
3. Seedlings shall generally be planted on 12-foot centers, for a density of approximately 302 trees per acre. Species shall be variously distributed to avoid homogeneous stands. The hardwood seedlings will be planted in a mosaic pattern. Spacing will vary as necessary to minimize direct competition and create a more natural regeneration appearance. Natural regeneration will be encouraged within the planted areas as well.
4. A mixture of hard mast and soft mast producing (including light-seeded) species shall be planted. The percentages and composition of the overstory and understory

species to be planted will be proposed by the Sponsor and approved by the USACE. Species selection will be based on soil and hydrologic conditions.

5. Seedlings shall be stored and handled appropriately and shall be planted during the non-growing season (December 15 to March 15).
6. Competing vegetation in the immediate vicinity of seedlings should be controlled, as needed, using chemical and/or mechanical means, for the first two years following planting.

2. Stand Enhancement.

The following standards will generally apply to most bottomland enhancement projects but may be modified, as necessary:

1. If necessary, wetland hydrology shall be restored by plugging or backfilling drainage ditches, removing or breaching levees, construction of retention dikes, cessation of pumping, etc.
2. Creating a favorable environment for seedling survival may require the creation of gaps and openings in overstory canopies if present. Such openings can be created through the use of mechanized equipment or chemicals approved for forest use (i.e. injection or basal spray). Applications can be conducted in a checkerboard, linear, or random pattern creating a mosaic of habitat types.
3. Chemical and/or mechanical control of invading noxious tree species, such as black willow.
4. Maintaining snags and/or cavity trees is a desired trait.
5. Seedlings shall generally be planted on at a random spacing dependent upon localized stand conditions. However, overall densities of approximately 225 trees per acre are desired.
6. Seedlings shall be stored and handled appropriately and shall be planted during the non-growing season (December 15 to March 15).
7. Competing vegetation in the immediate vicinity of seedlings should be controlled, as needed, using chemical and/or mechanical means, for the first two years following planting.

B. Water Regime Management.

1. If necessary, wetland hydrology shall be restored by plugging or backfilling drainage ditches, removing or breaching levees, construction of retention dikes, cessation of pumping, etc. (Figure 9).
2. The use of water as a management tool is well documented in dealing with pallustrine emergent wetlands, moist soil impoundments and tidal wetlands. However, most research on this subject is directly related to waterfowl management. The publication *Wetland Creation and Restoration; The Status and Science* (Kusler & Kentula, 1990) deals with this subject in the chapter entitled *Waterfowl Management Techniques for Wetland Enhancement, Restoration and Creation Useful in Mitigation Procedures*. One conclusion of this document is that major information gaps exist on subjects such as methods for enhancing or speeding natural events that aid in wetland restoration. Utilization and documentation of such techniques should provide useful results for future mitigation projects.
3. Water retention provides a number of both immediate and long-term benefits to the restoration process.
 - By retaining water levels, we can create an environment which directly favors the regeneration of oak species as well as native sedges and grasses while eliminating noxious weeds and other undesirable species;
 - Retained soil moisture from winter and spring floods, along with the capture of incidental rainfall will significantly increase the survival of planted seedlings and;
 - Provide an immediate enhancement to the value of the area for migrating and wintering waterfowl.
4. Specific guidelines of levee construction and/or spillways will be provided on a case by case basis.

IX. PROCEDURES FOR USING THE MITIGATION AREA

USACE-permit applicants may contract Sponsor to provide compensatory mitigation for authorized unavoidable adverse impacts to the aquatic environment if approved by the USACE. To receive approval to use the mitigation area, a USACE-permit applicant must, at a minimum, demonstrate to

the USACE that:

- A. There is no practicable alternative to the discharge of dredged or fill material into a wetland or other water of the United States,
- B. All appropriate and practicable measures to minimize adverse impacts to the aquatic ecosystem have been included in the project, and
- C. All appropriate and practicable compensatory mitigation for unavoidable adverse impacts is included in the project.

To adequately replace aquatic functions that would be lost or degraded in the project area, in-kind compensation of aquatic resource impacts will generally be required. However, out-of-kind compensation may be acceptable if the USACE determines that it is appropriate, practicable and environmentally preferable. On-site mitigation is preferred where there is a practical opportunity to compensate for important local aquatic functions. However, the mitigation area may be used when the USACE determines that using the mitigation area is environmentally preferable to on-site or near-site compensation. In choosing between on-site and near-site mitigation and the mitigation area, the USACE will consider the likelihood of success of on-site or near-site mitigation, compatibility with adjacent land uses, practicality of long-term monitoring and maintenance, and the relative cost of mitigation alternatives.

In general, using a mitigation area is preferable to on-site mitigation to compensate for minor aquatic resource impacts. There may be circumstances warranting a combination of on-site and off-site mitigation. In any case, the USACE shall have final authority to determine the acceptability of using the *Excel Mitigation Center* as compensatory mitigation for adverse impacts associated with USACE-authorized projects.

Once the USACE has indicated that permit recipients may fulfill their mitigation requirements offsite and that *Excel Mitigation Center* may be an appropriate alternative, permittees may contract with Sponsor. On such a contractual basis, Sponsor will then submit a Compensatory Mitigation Plan including a more detailed wetland delineation where appropriate, and applicable engineered drawings for the specified acreage and habitat type within the *Excel Mitigation Center*. Upon notification by the USACE, Sponsor will file appropriate deed restrictions (Exhibit B) on applicable acreage and perform the mitigation on behalf of the permittee. Approved mitigation activities will be implemented concurrent or in advance of authorized wetland impacts where possible. When

evaluating Compensatory Mitigation Plans, USACE will consider seasonal constraints such as attempting tree planting during summer months or drought periods, or mechanized activities during winter months or flood periods.

X. PERFORMANCE STANDARDS

The following standards shall be used to determine the minimum level of success in reaching the ecological goals of the mitigation area:

- A. As mitigation activities are conducted, the Sponsor shall dedicate in perpetuity an appropriate deed restriction on applicable acreage. The Sponsor shall survey the required acreage, develop an appropriate deed restriction for the surveyed area, submit the draft deed restriction to the USACE for review and approval, and record the USACE-approved deed restriction with the county clerk. The restriction shall not be removed from the deed or modified without written approval of the USACE. Conveyance of any interest in the property must be subject to the deed restriction. All deed restrictions shall be granted in perpetuity without encumbrances or other reservations, unless such encumbrances or reservations (e.g., retention of hunting, fishing, and hiking privileges by the landowners) do not adversely affect the ecological viability of the mitigation area.
- B. As mitigation activities are conducted, the Sponsor shall cease all land uses that are not consistent with this MP on applicable acreage, including livestock grazing and other agricultural practices, in perpetuity.
- C. The Sponsor shall achieve minimum planting rates for tree seedlings in areas that are to be developed into oak-dominated bottomland hardwood stands. Open areas (previously pasture) shall have a minimum of 180 viable seedlings/saplings per acre two (2) years after planting and 150 viable seedlings/saplings per acre five (5) years after planting. Stands of existing hardwoods shall have a minimum of 135 viable seedlings/saplings per acre two (2) years after planting and 115 viable seedlings/saplings per acre five (5) years after planting. The Sponsor will continue to replant and monitor the entire establishment and enhancement areas until the minimum success criteria have been achieved.
- D. The Sponsor shall insure that stands exhibit the characteristics of a viable bottomland

hardwood wetland community commensurate with the age of the stand and site conditions. These characteristics include canopy cover, density and diameter of trees, species diversity (woody and herbaceous), vertical stratification and other factors.

- E. The Sponsor shall provide written notice to the USACE upon completion of each approved mitigation activity.

XI. SERVICE AREA

The service area is the geographical region (e.g., watershed and counties) within which the mitigation area may be utilized, if approved, for compensatory mitigation for adverse impacts to the aquatic ecosystem anticipated by the Tulsa District, USACE-permit applicants. The *Service Area Map* in the appendices shows the Service Area, which is based on HUC boundaries and the Oklahoma state boundary. The Deep Fork Watershed (HUC 11100303) and some adjacent counties in the Lower North Canadian Watershed (HUC 11100302) will represent the Primary Service Area for the mitigation center. Projects occurring in other portions of the state will be considered on a case by case basis. The service area shall be as follows:

A. Primary Service Area

Like-kind habitat and out-of-kind habitat types within the counties associated with the Deep Fork River Drainage Basin, also referred to as HUC 11100303, specifically including the following counties: Creek, Lincoln, Logan, McIntosh, Muskogee, Okfuskee, Oklahoma, Okmulgee, and Pottawatomie, excluding those segments of Muskogee County located within the Arkansas River watershed. The primary service area will also include like-kind and out-of-kind habitat types located in the adjacent Lower North Canadian River Drainage Basin, also referred to as HUC 11100302, specifically including and limited to the following counties: Cleveland, Seminole, and the northern portion of Hughes.

Use of the mitigation center for like-kind habitat and out-of-kind habitat type impacts occurring within that segment of the Primary Service described as the Arkansas Valley Level III Ecoregion will be limited to linear projects.

B. Case by Case basis

Like-kind and out-of-kind habitat types located within adjacent HUC's and associated counties not included in the primary service area, within the jurisdictional boundaries of the

Tulsa District, USACE.

XII. ACREAGE EVALUATION AND UTILIZATION PROCESS

- A. While the ecological value of various management activities may vary, acreage is being used as a surrogate for functional assessment methodology in accordance with the allowance within the Federal guidelines. A total of 206 acres shall be available in the project for use in mitigation activities. Each of the 206 acres shall constitute 0.942 credit, resulting in a maximum of 194 credits available.
- B. The number of acres required to mitigate for unavoidable adverse project impacts to waters of the United States shall be specified in the USACE permit issued to the permittee/debtor.
- C. If the number of acres required for compensation is not a whole number, it shall be rounded to the nearest whole number. A minimum of 1 credit (1.062 acres) shall be debited from the acreage availability account for each transaction.
- D. The USACE shall determine on a permit-by-permit basis the relative quality of the aquatic resources that would be adversely impacted unless another MBRT requests in writing to coordinate with the USACE on a particular case or all subsequent cases. In the absence of consensus among the USACE and coordinating MBRT on the quality of an impacted area, an approved assessment methodology will be used to determine the relative quality (low, medium, or high) of the site.
- E. For applicants choosing to utilize Excel Mitigation Center, the following ratios shall be applied:

Forested Wetland Habitat

For adverse impacts to waters of the United States, the mitigation area shall be debited number of credits per acre of wetland habitat or other waters of the United States adversely impacted:

	Quality of Habitat Impacted		
Mitigation Activity	Low	Medium	High

Preservation	5:1	7.5:1	10:1
Enhancement	3.5:1	6:1	8.5:1
Restoration	2:1	4.5:1	7:1

Emergent Wetland Habitat

For adverse impacts to waters of the United States, the mitigation area shall be debited number of credits per acre of wetland habitat or other waters of the United States adversely impacted:

	Quality of Habitat Impacted		
Mitigation Activity	Low	Medium	High
Enhancement	2:1	3:1	5:1
Restoration	1:1	2:1	3:1

XIII. ACCOUNTING PROCEDURES

- A. Sponsor shall establish and maintain for inspection a ledger of all mitigation area transactions. The following information will be recorded in the ledger for each transaction:
1. USACE-permit applicant's name, address and telephone number
 2. USACE-permit and/or other identification number
 3. Location and description of the mitigated acreage
 4. Brief description of the adverse project impacts (e.g., nature, size, and quality of aquatic resource affected)
 5. Date of transaction
 6. Total number of acres in mitigation area- 206
 7. Total number of credits in mitigation area- 194
 8. Number of undeveloped acres currently available
 9. Number of developed acres ("banked" credits) available (e.g. credits created through the enhancement or restoration of acres within the bank that are in excess of any specific project or client need)

10. Number of acres utilized (credits sold)

- B. Sponsor shall provide an annual statement of the account to the USACE and all MBRT member agencies by January 31 of each year until all available acres have been utilized and mitigation activities are completed.
- C. Sponsor shall maintain an official map of the mitigation area reflecting the status of all mitigation area development and use.
- D. Sponsor shall provide a copy of each transaction (project) to the USACE within 30 days following the transaction. The USACE will provide a copy of the transaction record to other MBRT member agencies upon request.

XIV. LONG-TERM MANAGEMENT

- A. The Sponsor shall dedicate in perpetuity all acreage utilized for compensatory mitigation within the 206-acre mitigation area as a wetland preserve. The mitigation area shall not be disturbed, except by those MBRT-approved activities that would not adversely affect the intended extent, condition and function of the mitigation area. The Sponsor shall record an MBRT- approved deed restriction with the Lincoln County Clerk and provide a copy of the recorded deed restriction to the Regulatory Branch, USACE, Tulsa District, as a condition of each transaction. The deed restriction shall not be removed or modified without written approval of the USACE after coordination with the MBRT. Conveyance of any interest in the property shall be subject to the deed restriction.
- B. The mitigation area is vulnerable to acts of nature such as wildfires, climatic instability, and disease. Occurrence of such an act, following attainment of performance standards may require changes to the mitigation area, including revision the MP, to allow for maintenance activities to offset and counteract negative impacts. Depending upon the circumstances, however, it may be appropriate to let nature take its course, particularly when wetland vegetation is expected to eventually reestablish because of the continued existence of wetland hydrology and hydric soils and restrictions on incompatible land uses. Decisions on such issues shall be subject to approval by the USACE after coordination with the MBRT.

- C. Long-term management practices following attainment of the performance standards may include such activities as: 1) mechanical vegetation control, 2) selective herbicide treatments, 3) use of selected prescribed fire, 4) planting nurse crops to suppress or compete with weed species, 5) planting native herbaceous vegetation, and 6) water regime management. Such practices are valuable management tools and should remain available to the Sponsor. However, the Sponsor shall consider the effect of these practices on the long-term ecological objectives of the mitigation area prior to including them in any modification to MP, presented to the MBRT. Any such modifications to the MP or development of supplemental plans for the mitigation area shall be subject to approval of the USACE after coordination with the MBRT. Sponsor or Sponsors successors shall be responsible for long-term management practices following attainment of performance standards.
- D. Resource management activities (i.e., salvage, planting, spot herbicide treatments, food plots, etc.) that are part of an MBRT-approved revision to the MP may be conducted within the mitigation area provided the activity would enhance water quality, wildlife habitat or other forested wetland functions. The Sponsor shall submit proposed written resource management plan activities to the USACE. Such plans may be implemented if approved by the USACE after coordination with the MBRT. Recreational activities may be conducted within the mitigation area provided the activities would not degrade water quality, wildlife habitat or other forested wetland functions and are approved by the MBRT.
- E. Maintenance of existing roads and trails and other features within the mitigation area will be required to assure effective access for future management and monitoring activities. Recreational activities on the part of the property owners such as bird watching, hunting, fishing, and nature hikes will also be appropriate if conducted so as to have minimal adverse effects on the aquatic environment.
- F. Any resource management activity shall be performed in accordance with the following general conditions:
 - 1. Activities shall be designed to contribute to achievement of the objectives of the mitigation area.
 - 2. Den and cavity trees shall be preserved.

3. The removal of insect-damaged, diseased or storm felled trees is generally discouraged; however, these activities may be conducted if included in an MBRT-approved resource management plan.

G. Mineral Resources

1. Valuable mineral resources may exist under the land in this mitigation area. Other parties may own subsurface rights to such mineral resources in whole or in part. Recognizing that landowners in the State of Oklahoma cannot control a mineral owner's access to those minerals, the Sponsor shall take all reasonable steps to develop a Mineral Management Plan with the mineral owner(s) prior to the initiation of any mineral exploration, production, or transportation activities. The Mineral Management Plan shall include a list of all surface and subsurface ownership interests, a description of anticipated activities and resulting short- and long-term impacts on aquatic ecosystem functions and values, and a set of guidelines and best management practices to minimize the adverse impacts. The Sponsor shall, whenever practicable, work with the subsurface mineral owner(s) to develop leases, easements, and other surface use agreements that are consistent with the Mineral Management Plan.
2. The exploration, production and transportation of subsurface mineral resources beneath this mitigation area is acceptable provided the ground disturbing activities and surface alterations are minimized to the maximum extent practicable; activities are conducted in a manner that minimizes adverse environmental impacts; impacted areas are restored to pre-existing conditions as soon as practicable; reasonable and appropriate compensatory mitigation is achieved, and the entity conducting these activities complies with all applicable regulatory requirements, including those under Section 404 of the Clean Water Act. The number of acres in the mitigation area shall be reduced by the number of acres of area adversely impacted by the activities. If sufficient unused mitigation acreage is not available, the USACE will require the Sponsor to provide other appropriate off-site compensatory mitigation. The Sponsor may propose appropriate compensatory action subject to approval by the USACE.

- H. If at any point in the future, the Sponsor (or any succeeding sponsor) desires to transfer

responsibility for the long-term management and maintenance of the EXCel Mitigation Center lands and waters to another party or to dissolve their relationship to this land, certain conditions must be met:

1. Sponsor must formally transfer the responsibility for the long-term management of the EXCel Mitigation Center lands and waters to an organization or individual willing and capable of achieving and maintaining the goals and purposes of the mitigation center; and
2. The transfer of responsibility will be subject to approval by the USACE in coordination with the MBRT. When a collaborative agreement acceptable to all members of the MBRT is not possible within 45 days, the USACE as chair of the MBRT, has the authority to make the final decision.
3. The transfer of responsibility to a long-term management entity shall include the transfer of the entire long-term maintenance funds, and these funds shall continue to be used to manage the mitigation center in perpetuity in accordance with the terms of this mitigation plan.
4. The new long-term management entity shall evidence their concurrence and commitment to manage the mitigation center in accordance with the provisions of this mitigation plan by signing a copy of this plan and providing an original signature to the USACE for the record. From that time forward, the long-term management entity shall be responsible to manage the mitigation center in perpetuity in accordance with the terms of this mitigation plan.

XV. MONITORING, REPORTING AND REMEDIAL ACTIONS

- A. Sponsor shall monitor and report on progress toward meeting mitigation area goals and performance standards and conduct remedial activities to address problems that arise in the implementation of the MP as detailed below.
 1. The Sponsor shall establish the minimum number of monitoring stations necessary to reliably evaluate the ecological processes and document the success of the mitigation area (expected to be a series of three (3) to five (5) monitoring stations within each

stand). Plots will be located across the ecological gradient of each stand. Stations will be permanently identified with metal markers.

2. The Sponsor shall sample and record trees, saplings/shrubs, woody vines, and herbaceous plant species for species, survival, height class, and relative cover (e.g., basal area, diameter breast height (dbh), number of stems, and canopy and/or basal cover, as appropriate) using a sampling protocol similar to that recommended for the Comprehensive Method in the 1987 "USACE Wetland Delineation Manual". The Sponsor shall assess vegetation within a circular plot centered on the permanent marker. A 37.2 foot (1/10 th acre) radius shall be utilized for woody species. For herbaceous vegetation, four 3.7 foot = (1/1000 th acre) radius plots shall be established on the perimeter of each 1/10 th-acre plot.
 3. The Sponsor shall conduct two surveys per year for a minimum of five years, or until two years after the performance standards are reached, whichever is larger, collecting the survival and distribution of trees, saplings, and shrubs during an annual survey at the end of each growing season (October-November). Surveys shall include the methodology from the previous section as well as additional assessments deemed desirable by the Sponsor.
- B. The Sponsor shall submit an annual Progress Report for each calendar year to all MBRT members by February 1 of the following year for the first five years after the initiation of a project or until the performance standards are met, whichever is longer. After the final report is submitted, the MBRT will meet and review the operation of the mitigation area. The contents of an Annual Progress Report will vary based on current activity within the Mitigation Center, but in general shall contain the following:
1. The results of the previous year's survey, and the Sponsor's discussion about, and conclusions on, successful enhancements and likely causes of any setbacks or failures.
 2. Recommendations on future management activities for each stand based on successes and failures to date.
 3. General ecological overview of the mitigation area including a description of vegetative and wildlife communities and the effectiveness of mitigation measures implemented,

including such things as the elimination of cattle grazing.

4. Pertinent additional information on unforeseen acts of nature such as disease, wildfire, climatic instability, hydrology, soils, vegetation, fish and wildlife use of the area.
 5. Proposals for any additional contingency or remedial measures.
 6. Photographs of the site, taken from fixed locations depicted on a photo location map.
- C. In the event that the one or more components of the mitigation area do not achieve the performance standards or meet other requirements of this MP, the following sequence of remedial actions shall be taken:
1. Upon discovering that a component of the mitigation area does not comply with the requirements of this MP, including the deed restriction, the Sponsor shall take all appropriate actions to bring that component into compliance as soon as practicable. During the period that the mitigation area is out of compliance, the USACE may suspend its approval of the use of the mitigation area as compensatory mitigation for USACE-authorized projects.
 2. If remedial actions taken by the Sponsor under the provisions of the preceding paragraph do not result in the failing component of the mitigation area complying with the requirements of this MP despite reasonable efforts, the Sponsor will submit to the USACE proposed modifications to the MP (e.g., shift the emphasis from woody vegetation to herbaceous vegetation, or vice versa). Any modification of the MP requires the approval of the USACE after coordination with the MBRT before it may be implemented.

XVI. FINANCIAL ASSURANCES

- A. The Sponsor shall provide Financial Assurances in the following manner:
1. A performance bond in the amount of \$100,000, designated as Contingency Funds, to provide assurance of completion of mitigation improvements and enhancements at the mitigation center. In the event the Sponsor fails to comply with the terms of this

mitigation plan or fails to rectify any unforeseen events as determined necessary by the MBRT, these funds may be used by a third party, approved by the USACE in coordination with the MBRT, to complete the mitigation improvements. The performance bond will be maintained until all work at the mitigation center is complete and approved. In the event that the Contingency Funds are not used upon certification of ecological success of the mitigation improvements and enhancements, and with the concurrence of the MBRT, the Contingency Funds may be released of the Sponsor.

2. A trust account will be set up and designated as Long-Term Maintenance Funds. These funds will be generated from the sale of credits from the mitigation center and are designated to ensure that the mitigation center will be monitored, maintained, and if necessary remediated by the Sponsor to remain in compliance with this mitigation plan. These funds shall be used by the Sponsor or other USACE-approved Long Term Management entity for managing and maintaining the mitigation center in perpetuity. A percentage of each credit sold will be put into the trust account. A minimum balance of \$20,000 will be contributed from the sale of credits. After the project completion has been approved (i.e., the mitigation center has been closed to any additional clients), EXCel or its successor may at its option use any excess money accumulated in the trust for future maintenance. The Corps, as Chair of the MBRT, will approve and designate a successor to the fund should EXCel Mitigation or its successor cease to exist. Should EXCel sell the Mitigation Center, the purchaser will have the same rights and benefits of using the trust account for maintenance. A minimum balance of \$20,000 will be maintained in the account for long-term maintenance. Any funds spent for repairs and maintenance must be approved with the Corps. Should the trust accumulate \$40,000 or more, EXCel or its successor may withdraw once per year the balance greater than \$40,000. The trust fund must always have a minimum balance of not less than \$20,000 after all credits are sold.
 3. These financial assurance requirements shall only be modified subject to USACE approval, following coordination with the MBRT.
- B. The Sponsors shall provide to the MBRT, within 120 days of the effective date of this MBI, documentation demonstrating that it has established the necessary financial assurances. Failure to maintain adequate financial assurance shall constitute good cause for suspending bank activities. The USACE, after coordination with the MBRT, shall provide

written notice of, and a reasonable opportunity to correct any alleged financial assurance deficiencies prior to suspending bank activities. Upon meeting the performance standards for a given phase of development, or upon the approved transfer of the bank responsibilities to a successor, the financial assurance requirement may be modified upon written approval of the USACE, after coordination with the MBRT.

- C. The determination of the dollar amount of financial assurances to be maintained following the attainment of the performance standards shall be based on the Sponsor's estimate of the repair cost for mitigation failure during the monitoring and operation and maintenance period applicable to each stage of development and the cost of long-term operation and maintenance. The amount of financial assurance imposed on any particular stage of development will reflect realistic failure probabilities and reasonable repair costs as well as the cost of monitoring and reporting. Factors to be evaluated in estimating failure probability and repair cost will include various site-specific considerations (e.g., location in the watershed, pre-existing hydrology and soils, mitigation methods employed, ease in attaining performance standards, etc.). Substantial reserve funds might be unnecessary, for example, for areas impacted by a natural disaster when the underlying wetland hydrology and hydric soils remain intact and vegetation would naturally reestablish in the absence of planting and reforestation measures.

XVII. MITIGATION AREA OWNERSHIP/SPONSORSHIP

- A. Sponsor has acquired the right to enact deed restrictions on all 206 acres of real property to be included within the mitigation area (Exhibit A). All real property to be included within the mitigation area is owned in fee simple by an individual private landowner, and has been pledged by Sponsor for use in the mitigation area consistent with this MP. The Sponsors shall be responsible for developing, operating, and maintaining the mitigation area subject to the requirements of this MP. The inclusion of landowner property in the mitigation area and the granting of a deed restriction, that will restrict future land uses for the benefit of the mitigation area, shall not convey or establish any property interest on the part of any party to this instrument nor to any purchaser of mitigation rights. The MP does not authorize, nor shall it be construed to permit, the establishment of any lien, encumbrance, or other claim with respect to the property, with the sole exception of the right on the part of USACE to require Sponsor to implement elements of the MP, including

recording any deed restriction, required as a condition of the issuance of a permit under Section 404 of the Clean Water Act for discharges of dredged and fill material into waters of the United States associated with construction and operation and maintenance of the mitigation area.

- B. Landowner may convey fee simple title to any property included within the mitigation area, provided the necessary deed restrictions have been recorded for any property that is the subject of a previously constructed mitigation project.
- C. The Sponsor may transfer Sponsorship of the mitigation area to another party provided the new Sponsor(s) agrees to abide by the terms of this MP or an MBRT-approved, modified MP. Any such request shall be submitted in writing to the USACE. Upon approval of the transfer, all obligations for future performance of the original Sponsors shall be terminated. The physical ownership of mitigation area lands and the operating rights (Sponsorship) are separate components of the mitigation area and may be transferred independently.

XVIII. VALIDITY AND TENURE OF THIS AGREEMENT

This MP is effective immediately on the date it is signed by the Sponsor, and approved by the USACE, and shall remain in effect until it is modified or revoked by mutual agreement among the parties. Notwithstanding any future termination, revocation or modification of this agreement, the deed restrictions that direct the mitigation area to protect the aquatic ecosystem are perpetual.

XIX. APPENDICES

FIGURES

1. PROJECT VICINITY MAP
2. PROJECT LOCATION MAP
3. WATERS OF THE UNITED STATES MAP
4. STAND MAP
5. SITE DEVELOPMENT MAP
6. SOILS MAP
7. TOPOGRAPHIC MAP
8. SERVICE AREA MAP
9. LEVEE AND WEIR DESIGN DRAWING

EXHIBITS

- A. COPY OF EXCel MITIGATION CENTER AND LANDOWNER AGREEMENT
- B. SAMPLE DEED RESTRICTON